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“Filling gaps and removing traps
for sustainable resource management”

Enhancing the Sustainability of Insect Rearing Systems for Nutrition through a Multidimensional Potential Assessment Framework

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Abstract

The utilisation of insects for benefits in resource efficiency and nutrition is gaining momentum. In several countries, both, in the global North and South, insect rearing systems are being developed and introduced at a rapid pace. At the same time, expressions of concern about underestimated risks and reports of failures are also increasing. As yet, there is no standard or systematic approach to assess the actual potential insects represent for nutritional goals in a given context. The research project introduces a multidimensional approach to inform context-specific adaptations and thereby enhance the sustainability of the rearing systems and the corresponding value chains.

Our investigation is based on a three-dimensional framework, developed to allow a comparative evaluation of the primary social, ecological and entomological variables related to insect rearing. The approach was applied to a case study in Sandrandahi Commune in the Amoron'i Mania Region in the central highlands of Madagascar. Studies comprised a primary data collection phase and an ongoing secondary phase. The primary phase was conducted during an interdisciplinary research mission in October 2018 and two follow-up visits in 2019. The main research methods employed were gender and age disaggregated thematic focus group discussions, key stakeholder interviews, transect walks and insect inventories. Secondary data featured demographic, seasonal/climatic and biological data on different insect species.

We concluded that the potential for insect rearing in the case study area is significant. Needs and acceptance are high in the social dimension, as is a widespread demand for resource efficient nutrient sources, especially proteins in the ecological dimension. In the entomological dimension, a major obstacle identified was the fact that no single species meets joint criteria of being widely accepted as food, well adapted to the ecological conditions, especially climate and known for its suitability for domestication. Results also suggested that significant constraints in the availability of labour and investment, in suitable and sustainable feed sources and the inefficiency of market supply chains will have to be addressed by a rearing system design.

Keywords: Insect farming, Madagascar, nutrition, social-ecological systems